

## REMARKS

### **Claim Rejections - 35 USC 102**

The Examiner rejected claims 1-11, 13, 14, and 28-30 under 35 USC 102(a) as being anticipated by Misra (EP 1143511 A2 and EP 1143512 A2). That includes independent claims 1 and 28. Applicant submits that these claims are not anticipated by Misra.

The Examiner states that the compound of Misra comprises coated particles blended “with a polymeric carrier (corresponding to the polymer matrix material of the claimed invention) wherein the polymeric carrier may be silicone oil (thus meeting the limitations of claims 4 and 5).” It is true that claim 4 includes silicone as an alternative. However, it appears that the Examiner may have overlooked the limitation of “viscoelastic” in claim 1. An oil is not viscoelastic. “Viscoelasticity” is defined by the McGraw-Hill Dictionary of Scientific and Technical Terms, Fifth Edition, as “property of a material which is viscous but which also exhibits certain elastic properties such as the ability to store energy of deformation, and in which the application of a stress gives rise to a strain that approaches its equilibrium value slowly.” An oil, as is commonly understood, does not display such elastic properties. Elastic properties are also normally only present in solid substances.

Claim 1 and its dependencies can therefore not be anticipated by Misra because Misra does not disclose an elastic matrix material. Claim 28 includes the same limitation of claim 1 with respect to the viscoelastic polymer matrix material, and thus distinguishes over Misra because of the same reasons. Applicant, accordingly, respectfully requests withdrawal of the rejections of claims 1-11, 13, 14, and 28-30 under 35 USC 102 (a) as being anticipated by Misra.

The Examiner also rejected claims 1, 4, 5 and 13 under 35 USC 102 (b) as being anticipated by De Sorgo (EP 0790762 A2). Applicant submits that these

claims, as amended, are not anticipated by De Sorgo. Specifically, De Sorgo does not disclose solder particles having a melting temperature below 300°C as contemplated by the invention represented in claim 1.

De Sorgo discloses the use of thermally-conducting, electrically-insulating particulate solids suitable for use as filler particles, including boron nitride, aluminum oxide, aluminum nitride, magnesium oxide, zinc oxide, silicon carbide, beryllium oxide, and mixtures thereof. See page 5, lines 1-3. The materials disclosed in De Sorgo are all nitrides, oxides, and carbides, which are electrically-insulating and do not melt at a temperature below 300°C. As such, De Sorgo does not suggest that the particles can be melted. By contrast, the materials disclosed in paragraph [0014] of the present patent application are all thermally-conductive, electrically-conductive, and form solder particles that melt below 300°C. The limitation that the particles melt below 300°C is now included in claim 1. For at least this reason, claim 1 distinguishes over De Sorgo.

As such, Applicant respectfully requests withdrawal of the rejections of claims 1, 4, 5, and 13 under 35 USC 102 (b) as being anticipated by De Sorgo.

### **Claim Rejections – 35 USC 103**

The Examiner rejected the claims 1-27 under 35 USC 103 (a) as being unpatentable over Cross (US 6,284,817 B1) in view of Igaki (WO00/13190). Applicant submits that these claims are patentable over Cross in view of Igaki.

Cross discloses filler particles which may include iron, aluminum, zinc, silver, gold, lead, nickel, magnesium, boron, barium, platinum, palladium, copper, zirconium, titanium, uranium, vanadium, niobium, tungsten, silicon and conductive derivatives thereof, such as oxides and nitrides, as well as carbon, graphite, silicon carbide, and the like, and combinations thereof. See column 6 lines 39-45. The

material with the lowest melting point in this list is lead, with a melting temperature of 327.5°C. The materials on the list typically have melting temperatures above 1000°C. The purpose of the materials is to form filler particles. By contrast, the purpose of the materials in Applicant's invention is to provide solder particles that can melt. Cross does not suggest that the filler particles can be melted. While Cross does disclose the use of two different filler particles of different materials, Cross does not suggest that one of the filler particles can have a melting temperature sufficiently low for purposes of forming solder particles that can melt. In Cross, the purpose of providing filler particles of two different materials is to control thermal conductivity. See for example column 14, lines 8-20. In order to melt any such solder particles, a thermal cycle would typically have to be carried out as represented in Figure 4 of the drawings of the present patent application. In this thermal cycle, the temperature has to be raised to above a temperature at which the solder particles melt and then lowered to a temperature at which the polymer cures, and then lowered again. Cross only discloses that the temperature can be raised to the temperature at which the polymer cures. As such, Cross does not disclose a bi-temperature thermal cycle and, for this reason also, does not suggest a composition as claimed.

Igaki discloses (i) a viscous or cure type resin, or (ii) a resin paste having indium particles. Applicant will not now contend whether Igaki has enabled an embodiment having indium particles in a cure type resin, but may do so in future. Claim 1 distinguishes over Igaki because claim 1 discloses both fusible solder particles and filler particles in the matrix material, whereas Igaki only discloses a single material having a single melting temperature.

The combination of fusible solder particles having a melting temperature below 300°C and filler particles having a melting temperature above that is thus not

suggested by Cross and Igaki in combination. As such, claim 1 and its dependencies can not be obvious over the combination of Cross and Igaki. Claim 25 is similar to claim 1, but narrower because temperature ranges have been more closely defined. Claims 1, 25 and their dependencies can thus not be obvious over the combination of Cross and Igaki. Applicant, accordingly, respectfully requests withdrawal of the rejections of these claims and their pending dependencies.

Applicant respectfully submits that the present application is in condition for allowance. If the Examiner believes a telephone conference would expedite or assist in the allowance of the present application, the Examiner is invited to call Stephen M. De Klerk at (408) 720-8300.

Please charge any shortages and credit any overages to Deposit Account No. 02-2666. Any necessary extension of time for response not already requested is hereby requested. Please charge any corresponding fee to Deposit Account No. 02-2666.

Respectfully submitted,

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